

9.19 The Advisory Committee on Hospital Medical Records should be asked to consider records for special care babies (paragraph 5.21).

LABORATORY SERVICE

9.20 Effective laboratory support should be provided for special care work at all levels (paragraph 5.25).

OBSERVATION

9.21 Some facilities for observation of newborn babies should be provided in small maternity units not having formal special care arrangements (paragraph 5.29).

FOLLOW-UP

9.22 A well co-ordinated follow-up scheme should be organised in each area (paragraph 5.30).

9.23 Regular reviews of perinatal mortality and morbidity should be carried out so that avoidable factors can be defined (paragraph 5.32).

SECTION VI - RESEARCH

9.24 Further research into the prevention of low birth weight and illness in newborn babies should be supported (paragraphs 6.2-6.4).

SECTION VII - STAFFING OF SPECIAL CARE NURSERIES

MEDICAL STAFFING

9.25 The special care nursery should form, for medical staffing purposes, an integral part of the children's department of the hospital (paragraph 7.1).

9.26 Consideration should be given to the need for appropriate training posts to meet the demands of developments in neonatal medicine (paragraph 7.2).

9.27 In addition to two consultant paediatricians the primary duty of one member of the resident paediatric staff of the children's department should be the care of the neonate in the special care nursery (paragraph 7.3).

9.28 Intensive care nurseries should have, in addition to two or more consultant paediatricians and registrar staff, three resident paediatric staff engaged solely in neonatal work, plus an additional resident attached to the sick children's wards who would be available for cover (paragraph 7.4).

9.29 Special care nurseries provided in relation to maternity departments remote from children's departments should be replaced (paragraph 7.5).

9.30 The position of the single-handed consultant paediatrician engaged in special care work should be remedied as a matter of urgency (paragraph 7.6).

NURSE STAFFING

9.31 The nurse in overall charge of a special care nursery should be a registered nurse (SRN or SRCN) or midwife and should be trained in special care work (paragraph 7.9).

9.32 Two experienced nurses able to resuscitate the baby should be on duty in each shift (paragraph 7.9).

9.33 Nurse staffing ratios should be flexible because of the wide variation of activity between nurseries (paragraph 7.10).

9.34 Non-nursing duties in special care nurseries should be delegated (paragraph 7.14).

9.35 The special care nursery should have its own trained nurse staffing establishment (paragraph 7.15).

9.36 The staff of special care nurseries should not be involved in the bulk preparation of infant feeds (paragraph 7.17).

SECTION VIII - SPECIAL CARE NURSERIES

NUMBER OF COTS AND SIZE OF NURSERY

9.37 As a tentative guide to planning, six special care cots should be provided per 1,000 live births (paragraph 8.4).

9.38 Of the total special care cots in England and Wales some 320 cots will be required for the function of intensive care (paragraph 8.5).

9.39 Normally only one nursery, with a minimum size of 24 cots, should be provided for a population of 250,000 (paragraph 8.6).

DESIGN AND EQUIPMENT OF NURSERIES

9.40 Design should be flexible to allow adaptation to meet changes in demand (paragraph 8.7).

9.41 Babies requiring continuous observation should be congregated in one room of the nursery which should have a resuscitation trolley and special monitoring equipment (paragraph 8.8).

9.42 Heat regulation should be provided whereby a selected room temperature can be chosen by the staff (paragraph 8.10).

9.43 Facilities for summoning aid in an emergency should be available in the nursery (paragraph 8.14).

9.44 Single rooms for resident mothers together with day facilities should be provided (paragraph 8.16).

This report was submitted at an early draft stage to the British Paediatric Association's Special Sub-Committee considering these problems. The Expert Group are grateful for the comments received from the Association.

C2

Department of Health and Social Security, 1975

Report of the Working Party on the Prevention of Early Neonatal Mortality
and Morbidity (Chairman Professor T E Oppé)

RECOMMENDATIONS

- 1 Health authorities should review, as a matter of urgency, the arrangements for special care including intensive care of the newborn.
- 2 Health authorities should review the arrangements for the immediate care of the newborn baby including resuscitation and for ensuring that every newborn baby is medically examined by a doctor trained and experienced in the detection of deviations from normal development in accordance with the recommendation (d)(iii) of the Report on domiciliary midwifery and bed needs for maternity patients. (The views of the professional bodies concerned with the recommendation are being sought by the Department.)

- 3 The recommendations of the Expert Group on Special Care for Babies should be implemented as soon as possible. Health authorities should consult together to decide the siting in certain hospitals of special care baby units providing an intensive care function and which will be designated to serve the needs of the region. These units should have sufficient medical and nursing staff with special training and interest, and have adequate accommodation and equipment for this work including facilities for the transport of sick babies. They should be associated with large children's and maternity departments, and have a training and research function. Six cots per 1,000 live births are required overall for special care; the proportion of these cots which should be designated for intensive care and their location is a matter for local decision in each region.
- 4 The health care planning teams (child health) in each district should give priority to considering the needs of the newborn babies and to identify gaps in the service. In conjunction with other health care planning teams they should institute local studies on each perinatal death and handicapped baby to identify avoidable factors and monitor the effectiveness of perinatal care and follow-up.
- 5 Health authorities should consider the need for the training of doctors and nurses in the special and intensive care of the newborn and should ensure that nurses holding posts of responsibility have undergone the appropriate courses approved by the Joint Board of Clinical Nursing Studies.
- 6 The Department should ensure that there is a uniformly high standard of special care including intensive care of babies throughout the country.

C3 Cmd 6684, Vol I and II. HMSO London 1976

Fit for the Future: Report of the Committee on Child Health Services (Chairman Professor S D M Court)

(Summary of Chapter 8)

THE UNBORN AND NEWBORN BABY

- 1 There should be further study aimed at providing those involved with clearer guidance on what advice parents need during the antenatal period and how best to give it to them.
 - 2 Research into and development of methods for prenatal diagnosis should be continued and the specialised facilities required for this should be carefully planned.
 - 3 Further research should be encouraged into ways by which the prenatal well-being of the fetus can be monitored by methods which can be routinely applied and which do not cause distress to the mother.
 - 4 Mothers should be encouraged to take a larger part in the postnatal care of their babies and the maternity and neonatal departments should be sensitive to their social and psychological needs during this period.
 - 5 Every newborn baby should be evaluated immediately after delivery and should have a full postnatal examination between the age of 6-10 days. This postnatal screening examination should be the basis of the child's health record.
 - 6 The facilities for the transport of immature and seriously ill babies should be reviewed.
 - 7 Nurseries providing intensive care should be centralised with at least one in each Region which is of adequate size, appropriately equipped and staffed, and directed by a consultant in neonatal paediatrics.
 - 8 A substantial proportion of the nursing staff in special and intensive care nurseries should hold the certificate in special and intensive care for babies awarded by the Joint Board of Clinical Nursing Studies.
 - 9 The child health visitor should have contact with the expectant mother during pregnancy, and with mother and baby during the first few days of the baby's life.
 - 10 Further encouragement should be given to the training of midwives in the care of the newborn, and the social and emotional aspects of childbirth.
 - 11 High priority should be given to research into the aetiology of handicapping conditions, and into the regional and social class variations in perinatal mortality and morbidity.
- p 310 18.13 The paediatric specialties which have developed to the stage when consultant posts should be established, maintained or increased and the necessary senior training posts provided are: perinatal paediatrics ...

18.14 Perinatal Paediatrics: In view of the extent of the need, and the slow rate of fall in perinatal mortality we recommend that this specialty should be organised at Area level. To enable consultants to be trained, the first stage should be the establishment of at least one full-time consultant in each University Centre.

- p 359 21.40 Our findings are therefore that there are far too many different types of clinical records used in the child health services and that this is an obstacle to integrating child care in the way that we are proposing. In particular records used by hospitals and general practitioners are not designed to monitor child development or cater for the special circumstances of the growing child. There are also serious omissions such as the absence of a separate record for every newborn baby. (At present, by tradition, a baby born in hospital is not counted as a separate in-patient or as a separate clinical record unless admitted to a special care nursery.) This omission is important in view of the recommendations of the Peel Committee, which we have endorsed, that the immediate postnatal care of every infant irrespective of where it is born should include a full clinical examination and that this screening medical examination should be fully recorded and act as a basis for the future health record of the child. Equally, the current diversity of records does little

to assist the development of comprehensive assessment of handicapped children a service of considerable complexity, where competent clinical recording is essential.

- p 366 Care of the Newborn: 22.11 We attach high priority to the improvement of services for the newborn and in particular to the implementation of our recommendations for the organisation of intensive care and for the resuscitation and clinical examination of the newborn. (Paragraphs 8.27-8, 8.34 and 8.39). We welcome the Department of Health's new circular asking authorities to review facilities for the newborn.

C4 Department of Health and Social Security HC(76)40 (August 1976)

Health Services Development Report of the Working Party on the Prevention
of Early Neonatal Mortality and Morbidity

SUMMARY

This circular asks health authorities to review the facilities (including resuscitation) for the neonatal care of babies and the special care services, including intensive care, for certain categories of newborn babies.

- 1 The report of the working party under the Chairmanship of Professor T E Oppé is annexed. The Standing Medical Advisory Committee has endorsed its recommendations.
- 2 The report draws attention to the relatively high infant mortality rate in England and Wales compared with some other European countries. About one third of infant deaths occur in the first day and nearly 60% occur in the first week; this clearly underlines the crucial importance of the quality of care given during this short span. It is the first day death rates which have so far remained most resistant to improvement.
- 3 The working party refer to the Report* of the Expert Group on Special Care for Babies and to the Peel report. The Report of the Expert Group on Special Care for Babies emphasises the important preventive function of modern special and intensive care for certain vulnerable babies which not only saves lives but substantially reduces mental and physical handicap, with consequent improvements in the quality of life of the survivors and benefits for the services to the handicapped. This care requires a sufficient number of trained staff helped by up-to-date monitoring, diagnostic and therapeutic equipment backed up by laboratory and radiological services.
- 4 An indication of the deficiencies that exist is given by a review of 43 special care baby units carried out by the working party which revealed that only 8 of them were able to measure reliably environmental oxygen and only 2 measured arterial oxygen. The working party felt also that units were often understaffed and too small. All this led them to conclude that deficiencies in the services provided must be remedied. Existing knowledge should be more widely applied to reduce avoidable mortality and serious mental and physical handicap among survivors.
- 5 The organisation, size, staffing, design and equipping of special care baby units (including those to undertake also intensive care) are discussed in Sections 5, 7 and 8 of the 'Report of the Expert Group on Special Care for Babies'. It recommends a two tier system of provision: (i) special care units associated with maternity and children's departments of district general hospitals, and (ii) combined special care and intensive care units associated with certain maternity and children's departments of general hospitals that would have substantial resources in staff and equipment. As well as providing special care these units would look after the small proportion of babies whose healthy survival depends on highly specialised techniques. It is envisaged that there will be relatively few of this latter type of unit, probably only one or two per region.
- 6 The Report of the Expert Group recommends that, as a tentative guide to planning, 6 special care cots should be provided per 1000 live births per annum. It suggests that the ratio be applied flexibly to take account of local factors such as population density, birth rate, social class distribution and the incidence of low birth weight babies. The Report of the Expert Group sets out the advantages of large special care units; health authorities will best be able to determine the size of unit required in a particular place when they carry out the review suggested in paragraph 8 below.
- 7 It is recognised in the Consultative Document 'Priorities for Health and Personal Social Services in England' that the need to improve the level of special care for low birth weight and sick newborn babies is urgent (paragraph 9.6), and (paragraph 4.11) that special care baby units should be among those developments which authorities should try where necessary to promote. Nationally the Consultative Document envisages limited growth in expenditure for the general and acute services. But some authorities cannot expect revenue allocations to be increased, or possibly even maintained at present levels in real terms; these authorities should take such steps as are necessary to protect these services and plan for any developments as far as is practicable.
- 8 In completing their review of services, in accordance with DS 85/75, and when drawing up future plans (HC(76)29 refers) authorities are asked to examine services for the newborn in the light of the above mentioned reports and of the general proposals in the Priorities Consultative Document for the future development of the acute hospital services within the resources likely to be available. In doing this they may wish to consider information about the numbers of cots provided in special care baby units, including those designated in certain units for intensive care, together with the size of units, and the standards of equipment and levels of staffing provided.

* DHSS reports on Public Health and Medical Subjects: No 127 dated 1971

APPENDIX D

D1	<u>Special Care Baby Unit Schedule of Accommodation</u>		
Ward space	Milk room	Consultant's office	Medical staff changing room and WC
Isolation facilities	Clean utility room	Medical staff office	
Admission room	Dirty utility room	Duty doctor's bedroom	Nursing staff changing room and WC
Treatment room	Domicilliary storage room	Tutorial room	
Laboratory	Storage rooms	Nursing officer's room	Cleaner's room and storage
Electronics workshop	Reception	Nursing staff room	Mothers' bedrooms
Incubator sterilisation room	Secretarial office	Health visitor's room	Mothers' sitting room
			Mothers' kitchen
			Mothers' bathroom and WC

D2 Special Care Baby Unit

Schedule of equipment required for a SCBU of 30 cots (5 intensive care) catering for 5,000 newborn infants per annum

Incubators 15	Equipment for monitoring and recording vital signs including the heart rate, ECG, respiration and blood pressure 5
Medical treatment centre 1	Temperature monitors (2 probes each) 8
Resuscitation trolleys with overhead heaters .. 2	Breast pump 1
Ventilators 2-3	Dopler BP measuring apparatus 1
Transport incubator with ventilator and monitoring equipment 1-2	ECG machine 1
CPAP apparatus 4	Blood gas and pH analyser 1
Oxygen head boxes 8	Barometer 1
Wall outlets for oxygen, air and suction .. 30*	Microhaematocrit 1
Air-oxygen blenders 6	Microscope 1
Humidifiers 6	Total solids optical refractometer 1
Ambient oxygen analysers 8	Dextrose sticks reflectometer 1
Apnoea alarms 8	Blood warmer for exchange transfusions 1
Light therapy units 7	Microbilirubinometer 1
Infusion pumps 8	X-ray machine 1
Syringe pumps 4	Dial weighing scales 4
Arterial oxygen monitors and recorders 3	Incubator infant weighing scales 4
	Infant length measurement board 1

* Provision of these outlets at each cot site permits flexibility in the use of the accommodation.

APPENDIX E

E1 WHO International Classification of Diseases 9th Edition Vol I (to be published January 1979)

Certification, Rules for Classification

PERINATAL MORTALITY

It is recommended that, where practicable, a separate certificate of cause of perinatal death should be adopted, in which the causes are set out in the following manner:

- (a) Main disease or condition in fetus or infant
- (b) Other diseases or conditions in fetus or infant
- (c) Main maternal disease or condition affecting fetus or infant
- (d) Other maternal diseases or conditions affecting fetus or infant
- (e) Other relevant circumstances

The form of certificate should include identifying particulars with relevant dates and times, a statement as to whether the baby was born alive or dead, and information about autopsy.

For a thorough analysis of perinatal mortality, supplementary data on both mother and child is needed in addition to information about the causes of death. Consideration should be given to the collection of the following items as a minimum, not only for perinatal deaths but also for all live births, in order to provide denominators for the calculation of meaningful rates:

CERTIFICATE OF CAUSE OF PERINATAL DEATH	
To be completed for stillbirths and live born infants dying within 168 hours (1 week) from birth	
<i>(Identifying Particulars)</i>	<input type="checkbox"/> This child was live born on _____ at _____ hours and died on _____ at _____ hours <input type="checkbox"/> This child was stillborn on _____ at _____ hours and died Before labour <input type="checkbox"/> During labour <input type="checkbox"/> Not known <input type="checkbox"/>
Mother	Child
Date of birth <input style="width: 40px; height: 15px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 15px; border: 1px solid black;" type="text"/> <input style="width: 40px; height: 15px; border: 1px solid black;" type="text"/> or, if unknown, age (years) <input style="width: 40px; height: 15px; border: 1px solid black;" type="text"/>	Birthweight: grammes Sex: Boy <input type="checkbox"/> Girl <input type="checkbox"/> Indeterminate <input type="checkbox"/> Single birth <input type="checkbox"/> First twin <input type="checkbox"/> Second twin <input type="checkbox"/> Other multiple <input type="checkbox"/>
Number of previous pregnancies Live births <input style="width: 20px; height: 15px; border: 1px solid black;" type="text"/> Stillbirths <input style="width: 20px; height: 15px; border: 1px solid black;" type="text"/> Abortions <input style="width: 20px; height: 15px; border: 1px solid black;" type="text"/>	1st day of last menstrual period <input style="width: 60px; height: 15px; border: 1px solid black;" type="text"/> or, if unknown, estimated duration of pregnancy (completed weeks) <input style="width: 40px; height: 15px; border: 1px solid black;" type="text"/> Antenatal care, two or more visits Yes <input style="width: 15px; height: 15px; border: 1px solid black;" type="text"/> No <input style="width: 15px; height: 15px; border: 1px solid black;" type="text"/> Not known <input style="width: 15px; height: 15px; border: 1px solid black;" type="text"/>
Outcome of last previous pregnancy: Live birth <input style="width: 15px; height: 15px; border: 1px solid black;" type="text"/> Stillbirth <input style="width: 15px; height: 15px; border: 1px solid black;" type="text"/> Abortion <input style="width: 15px; height: 15px; border: 1px solid black;" type="text"/> Date <input style="width: 40px; height: 15px; border: 1px solid black;" type="text"/>	Delivery: Normal spontaneous vertex <input type="checkbox"/> Other (specify)
CAUSES OF DEATH	
a. Main disease or condition in fetus or infant	
b. Other diseases or conditions in fetus or infant	
c. Main maternal disease or condition affecting fetus or infant	
d. Other maternal diseases or conditions affecting fetus or infant	
e. Other relevant circumstances	
The certified cause of death has been confirmed by autopsy <input type="checkbox"/> Autopsy information may be available later <input type="checkbox"/> Autopsy not being held <input type="checkbox"/>	I certify Signature and qualification

Mother

Date of birth

Number of previous pregnancies: live births/stillbirths/abortions

Outcome of last previous pregnancy: live birth/stillbirth/abortion and date

Present pregnancy: First day of last menstrual period (if unknown, then estimated duration of pregnancy in completed weeks)

Antenatal care, two or more visits: yes/no/not known

Delivery: normal spontaneous vertex/other (specify)

Child

Birthweight in grammes

Sex: boy/girl/indeterminate

Single birth/first twin/second twin/other multiple birth

If stillborn, when death occurred: before labour/during labour/not known

Other variables that might appear on the basic certificate include particulars of the birth attendant, as follows: physician/trained midwife/other trained person (specify)/other (specify).

The method by which the supplementary data is collected will vary according to the civil registration system obtaining in different countries. Where it can be collected at the registration of the stillbirth or early neonatal death, a form similar to the 'Certificate of Cause of Perinatal Death' on page 20 could be used. Otherwise, special arrangements would need to be made (for example, by linking birth and death records) to bring together the supplementary data and the cause of death.

Where civil registration requirements make it difficult to introduce a common death certificate for live born and stillborn infants, the problem could be met by separate certificates for stillbirths and early neonatal deaths, each incorporating the recommended format for the causes of death.

Statement of Causes of Death

The form of certificate provides five sections for the entry of causes of perinatal deaths, labelled (a) to (e). In sections (a) and (b) should be entered diseases or conditions of the infant or fetus, with the single most important one of these in section (a) and the remainder, if any, in section (b). By 'the most important' is meant that pathological condition which in the opinion of the certifier made the greatest contribution to the death of the infant or fetus. The mode of death, eg heart failure, asphyxia, anoxia, should not be entered in section (a) unless it was the only fetal or infant condition known. This also holds true for prematurity.

In sections (c) and (d), the certifier should enter all diseases or conditions in the mother which in his opinion had some adverse effect on the infant or fetus. Again, the most important one of these should be entered in section (c) and the others, if any, in section (d). Section (e) is provided for the reporting of any other circumstance which the certifier considers to have a bearing on the death but which cannot be described as a disease or condition of the infant or the mother. An example of this might be delivery in the absence of an attendant.

The following examples illustrate the statement of the causes of death for the cases described:

Example 1: The mother, whose previous pregnancies had ended in spontaneous abortions at 12^w and 18 weeks, was admitted when 24 weeks pregnant, in premature labour. There was spontaneous delivery of a 700 g infant which died during the first day of life. The main finding on autopsy was 'pulmonary immaturity'.

Causes of perinatal death:

- (a) Pulmonary immaturity
- (b) -
- (c) Premature labour, cause unknown
- (d) Recurrent aborter
- (e) -

Example 2: A primigravida aged 26 years with a history of regular menstrual cycles. She received routine antenatal care starting at the 10th week of pregnancy. At 30-32 weeks, fetal growth retardation was noted clinically, and confirmed at 34 weeks. There was no evident cause apart from a symptomless bacteriuria. A Caesarean section was performed and a liveborn boy weighing 1600 g was delivered. The placenta weighed 300 g and was described as infarcted. Respiratory distress syndrome developed which was responding to treatment. The baby died suddenly on the third day. Autopsy revealed extensive pulmonary hyaline membrane and massive intraventricular haemorrhage.

Causes of perinatal death:

- (a) Intraventricular haemorrhage
- (b) Respiratory distress syndrome
Retarded fetal growth
- (c) Placental insufficiency
- (d) Bacteriuria in pregnancy
Caesarean section
- (e) -

Example 3: A known diabetic was controlled during her first pregnancy with difficulty. She developed megaloblastic anaemia at 32 weeks. Labour was induced at 38 weeks. There was spontaneous delivery of an infant weighing 3,200 g. The baby developed hypoglycaemia. There was death on the second day. Autopsy showed truncus arteriosus.

Causes of perinatal death:

- (a) Truncus arteriosus
- (b) Hypoglycaemia
- (c) Diabetes
- (d) Megaloblastic anaemia
- (e) -

Example 4: The patient was a 30 year old woman with a healthy four year old boy. There was a normal pregnancy apart from hydramnios. X-ray at 36 weeks suggested anencephaly. Labour was induced. A stillborn anencephalic fetus weighing 1,500 g was delivered.

Causes of perinatal death:

- (a) Anencephaly
- (b) -
- (c) Hydramnios
- (d) -
- (e) -

Coding of Causes of Death

Each condition entered in sections (a), (b), (c) and (d) should be coded separately. Maternal conditions affecting the infant or fetus, entered in sections (c) and (d), should be coded to categories 760-763 and these codes should not be used for sections (a) and (b). Conditions in the fetus or infant, entered in sections (a) and (b), can be coded to any categories other than 760-763 but will most often be coded to categories 764-779 (Perinatal conditions) or 740-759 (Congenital anomalies). Only one code should be entered for sections (a) and (c), but for sections (b) and (d) as many codes should be entered as there are conditions reported.

Section (e) is provided not so much for statistical analysis as for review of individual perinatal deaths and will not therefore normally need to be coded. If, however, an attempt at statistical analysis of the circumstances entered in section (e) is desired, some suitable categories may exist in the E and V Codes; where this is not the case, users should devise their own coding system for this information.

The selection rules for general mortality do not apply to the perinatal death certificate. It may happen, however, that perinatal death certificates are received where the causes of death have not been entered in accordance with the guidelines on page 733. Such cases should, whenever possible, be referred to the certifier for correction, but where this is not possible, the following rules should be applied.

Rule P1 - Mode of death or prematurity entered in section (a): If heart or cardiac failure, asphyxia or anoxia (any condition in 768-) or prematurity (any condition in 765-) is entered in section (a) and other conditions of the infant or fetus are entered either in sections (a) or (b), code the first mentioned on these other conditions as if it had been entered alone in section (a) and code the condition actually entered in section (a) as if it had been entered in section (b).

Example 1: Liveborn; death at 4 days

	<u>Coding</u>
(a) Prematurity	741.9
(b) Spina bifida	765.1
(c) Placental insufficiency	762.2
(d) -	

Prematurity is coded at (b) and spina bifida at (a).

Example 2: Liveborn; death at 50 minutes

	<u>Coding</u>
(a) Severe birth asphyxia Hydrocephalus	742.3
(b) -	768.5
(c) Obstructed labour	763.1
(d) Severe pre-eclampsia	760.0

Severe birth asphyxia is coded at (b) and hydrocephalus at (a).

Rule P2 - Two or more conditions entered in sections (a) or (c): If two or more conditions are entered in section (a) or section (c), code the first mentioned of these as if it had been entered alone in section (a) or (c) and code the others as if they had been entered in sections (b) or (d).

Example 3: Stillborn; death before onset of labour

	<u>Coding</u>
(a) Severe fetal malnutrition Light for dates Antepartum anoxia	764.1
(b) -	768.0
(c) Toxaemia Placenta praevia	760.0
(d) -	762.0

Light for dates with fetal malnutrition is coded at (a) and antepartum anoxia at (b); toxaemia is coded at (c) and placenta praevia at (d).

Example 4: Liveborn; death at 2 days

	<u>Coding</u>
(a) Subdural haemorrhage Massive inhalation of meconium Intrauterine anoxia	767.0

(b) Hypoglycaemia	770.1
Prolonged pregnancy	768.4
	775.6
	766.2
(c) Toxaemia	760.0
(d) Forceps delivery	763.2

Subdural haemorrhage is coded at (a) and the other conditions entered in (a) are coded at (b).

Rule P3 - No entry in sections (a) or (c): If there is no entry in section (a) but there are conditions of the infant or fetus entered in section (b), code the first mentioned of these as if it had been entered in section (a); if there are no entries in either section (a) or section (b), use code 779.9 (Unspecified perinatal cause) for section (a).

Similarly, if there is no entry in section (c) but there are maternal conditions entered in section (d), code the first mentioned of these as if it had been entered in section (c); if there are no entries in either section (c) or section (d), use some artificial code (eg xxxx) for section (c) to indicate that no maternal condition was reported.

Example 5: Liveborn; death at 15 minutes	
	<u>Coding</u>
(a) -	767.0
(b) Tentorial tear	769
Respiratory distress syndrome	
(c) -	xxx.x
(d) -	

Tentorial tear is coded at (a); xxx.x is coded at (c).

Example 6: Liveborn; death at 2 days	
	<u>Coding</u>
(a) -	779.9
(b) -	
(c) -	760.0
(d) Eclampsia (longstanding essential hypertension)	

Unspecified perinatal cause is coded at (a); eclampsia is coded at (c).

Rule P4 - Conditions entered in wrong section: If a maternal condition (ie conditions in 760-763) is entered in sections (a) or (b) or if a condition of the infant or fetus is entered in sections (c) or (d), code the conditions as if they had been entered in the respective correct section.

If a condition classifiable as a condition of the infant or fetus or as a maternal condition is mistakenly entered in section (e), code it as an additional fetal or maternal condition in sections (b) or (d) respectively.

Example 7: Stillborn; death after onset of labour	
	<u>Coding</u>
(a) Severe birth asphyxia	768.5
(b) Persistent occipitoposterior	
(c) -	763.1
(d) -	763.2
(e) Difficult forceps delivery	

Persistent occipitoposterior is coded at (c); difficult forceps delivery is coded at (d).

Rule P5 - Obstetrical complications recorded as causes of death before labour: If the certificate shows that the fetus died before the onset of labour and obstetrical complications that could not have affected the outcome are recorded as causes of death, ignore such causes.

Example 8: Stillborn; death before onset of labour	
	<u>Coding</u>
(a) Anoxia	768.0
(b) -	
(c) Severe pre-eclampsia	760.0
(d) Accidental concealed antepartum haemorrhage	762.1
Obesity	760.8
Breech delivery	

Breech delivery is not coded since the fetus died before labour started.

DEFINITIONS

- Live Birth:** Live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered live born.
- Fetal Death:** Fetal death is death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation

of the umbilical cord, or definite movement of voluntary muscles.

- 3 Causes of Death: The causes of death to be entered on the medical certificate of cause of death are all those disease, morbid conditions or injuries which either resulted in or contributed to death and the circumstances of the accident or violence which produced any such injuries.
- 4 Underlying Cause of Death: The underlying cause of death is (a) the disease or injury which initiated the train of events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury.
- 5 Birthweight: The first weight of the fetus or newborn obtained after birth. This weight should be measured preferably within the first hour of life before significant postnatal weight loss has occurred.
- 6 Low Birthweight: Less than 2,500 g (up to, and including 2,499 g).
- 7 Gestational Age: The duration of gestation is measured from the first day of the last normal menstrual period. Gestational age is expressed in completed days or completed weeks (eg events occurring 280 to 286 days after the onset of the last normal menstrual period are considered to have occurred at 40 weeks of gestation).
Measurements of fetal growth, as they represent continuous variables, are expressed in relation to a specific week of gestational age (eg the mean birthweight for 40 weeks is that obtained at 280-286 days of gestation on a weight-for-gestational age curve).
- 8 Pre-term: Less than 37 completed weeks (less than 259 days).
- 9 Term: From 37 to less than 42 completed weeks (259 to 293 days).
- 10 Post-term: Forty-two completed weeks or more (294 days or more).
- 11 Maternal Mortality: A maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

Maternal deaths should be subdivided into two groups:

(i) Direct obstetric deaths: those resulting from obstetric complications of the pregnant state (pregnancy, labour and puerperium), from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above.

(ii) Indirect obstetric deaths: those resulting from previous existing disease or disease that developed during pregnancy and which was not due to direct obstetric causes, but which was aggravated by physiologic effects of pregnancy.

RECOMMENDATIONS

- 1 Responsibility for Medical Certification of Cause of Death: Medical certification of cause of death should normally be the responsibility of the attending physician. In the case of deaths certified by coroners or other legal authorities, the medical evidence supplied to the certifier should be stated on the certificate in addition to any legal findings.
- 2 Form of Medical Certificate of Cause of Death: The forms of medical certificate of cause of death should conform to the models appended(1) to these recommendations.
- 3 Confidentiality of medical information: In the statistical use of the medical certificate of cause of death and other medical records, administrative procedures should provide such safeguards as are necessary to preserve the confidential nature of the information given by the physician.
- 4 Selection of the Cause for Mortality Tabulation: For the purpose of single cause mortality coding, the cause for tabulation should be selected from the particulars entered on the medical certificate of cause of death in accordance with such rules as may be from time to time approved by the Assembly.
- 5 Use of the International Classification of Diseases: Mortality and morbidity statistics should be coded according to the Detailed List of three-digit categories of the International Classification of Diseases, with or without the fourth-digit sub-categories, using for the purpose the tabular list of inclusions and the alphabetical index. Save in exceptional circumstances, fourth-digit sub-categories, when published, should be those of the International Classification of Diseases; any additions or variations should be indicated in published statistical tables.
- 6 Perinatal Mortality Statistics: It is recommended that national perinatal statistics should include all fetuses and infants delivered weighing at least 500 g (or, when birthweight is unavailable, the corresponding gestational age (22 weeks) or body length (25 cm crown-heel)), whether alive or dead. It is recognised that legal requirements in many countries may set different criteria for registration purposes, but it is hoped that countries will arrange the registration or reporting procedures in such a way that the events required for inclusion in the statistics can be identified easily. It is further recommended that less mature fetuses and infants should be excluded from perinatal statistics unless there are legal or other valid reasons to the contrary.
It is recommended above that national statistics should include fetuses and infants weighing between 500 g and 1000 g, both for their inherent value and because their inclusion improves the completeness of reporting at 1000 g and over. Inclusion of this group of very immature births, however, disrupts international comparisons because of differences in national practices concerning their registration. Another factor affecting international comparisons is that all live born infants, irrespective of birthweight, are included in the calculation of rates, whereas some lower limit of maturity is applied to infants born dead.
In order to eliminate these factors, it is recommended that countries should present, solely for international comparisons, 'standard perinatal statistics' in which both the numerator and denominator of all rates are restricted

(1) See page 20

to fetuses and infants weighing 1000 g or more (or, where birthweight is unavailable, the corresponding gestational age (28 weeks) or body length (35 cm crown-heel)).

- 7 **Maternal Mortality Statistics:** The maternal mortality rate, the direct obstetric death rate and the indirect obstetric death rate should be expressed as rates per 1000 live births.
- 8 **Statistical Tables:** The degree of detail in cross classification by cause, sex, age and area of territory will depend partly on the purpose and range of the statistics and partly on the practical limits as regards the size of particular tables. The following patterns, designed to promote international comparability, consist of standard ways of expressing various characteristics. Where a different classification is used (eg in age-grouping) in published tables, it should be so arranged as to be reducible to one of the recommended groupings.
- (a) Analysis by the International Classification of Diseases should, as appropriate, be in accordance with:
 - i the Detailed List of three-digit categories, with or without fourth-digit sub-categories;
 - ii the Basic Tabulation List of 307 Causes;
 - iii the Mortality List of 50 Causes;
 - iv the Morbidity List of 50 Causes.
 - (b) Age classification for general purposes
 - i Under 1 year, single years to 4 years, 5 year groups from 5 to 84 years, 85 years and over;
 - ii Under 1 year, 1-4 years, 5-14 years, 15-24 years, 25-34 years, 35-44 years, 45-54 years, 55-64 years, 65-74 years, 75 years and over;
 - iii Under 1 year, 1-14 years, 15-44 years, 45-64 years, 65 years and over.
 - (c) Age classification for special statistics of infant mortality
 - i By single days for the first week of life (under 24 hours, 1, 2, 3, 4, 5, 6 days), 7-13 days, 14-20 days, 21-27 days, 28 days up to, but not including, 2 months, by single months of life from 2 months to 1 year (2, 3, 4 ... 11 months);
 - ii Under 24 hours, 1-6 days, 7-26 days, 28 days up to, but not including 3 months, 3-5 months, 6 months but under 1 year;
 - iii Under 7 days, 7-27 days, 28 days but under 1 year.
 - (d) Age classification for early neonatal deaths
 - i Under 1 hour, 1-11 hours, 12-23 hours, 24-47 hours, 48-71 hours, 72-167 hours;
 - ii Under 1 hour, 1-23 hours, 24-167 hours.
 - (e) Birthweight classification for perinatal mortality statistics - By weight intervals of 500 g, ie 1000-1499 g, 1500-1999 g etc.
 - (f) Gestational age classification for perinatal mortality statistics - Under 28 weeks (under 196 days), 28-31 weeks (196-223 days), 32-36 weeks (224-258 days), 37-41 weeks (259-293 days), 42 weeks and over (294 days and over).
 - (g) Classification by area should, as appropriate, be in accordance with:
 - i each major civil division;
 - ii each town or conurbation of 1,000,000 population and over, otherwise the largest town with a population of at least 100,000;
 - iii national aggregate of urban areas of 100,000 population and over;
 - iv national aggregate of urban areas of less than 100,000 population;
 - v national aggregate of rural areas.

Note 1: Statistics relating to (iii), (iv) and (v) should be accompanied by the definitions of urban and rural used in them.

Note 2: In countries where coverage of medical certification of cause of death is completed or limited to certain areas, separate figures should be published for medically certified and other deaths.

Tabulation of Causes of Death: Statistics of causes of death in respect of the territory as a whole should be in accordance with recommendation 8 (a) i, or, if this is not possible, with recommendation 8 (a) ii. They should preferably be classified by sex and the age groups in recommendation 8 (b) i.

Statistics of causes of death in respect of the areas in recommendation 8 (g) should be in accordance with recommendation 8 (a) ii or, if this is not possible, with recommendation 8 (a) iii. They should preferably be classified by sex and the age groups in recommendation 8 (b) ii.

For statistics of perinatal mortality derived from the form of certificate recommended for this purpose (see page 20), full scale multiple cause analysis of all conditions reported will yield the maximum of benefit. Where this is impracticable, analysis of the main disease or condition in the fetus or infant (part (a)) and of the main maternal condition affecting the fetus or infant (part (c)) with cross-tabulation of groups of these two conditions should be regarded as the minimum. Where it is necessary to select only one condition (for example, when it is necessary to incorporate early neonatal deaths in the single cause tables of deaths at all ages), the main disease or condition in the fetus or infant (part (a)) should be selected.

APPENDIX F

Form for the Study of Perinatal Mortality in Quebec

Complete this form for all infants weighing more than 500 g at birth who are stillborn or die before they have completed 7 full days of life (167 hours 59 minutes inclusive).

In the case of a multiple pregnancy a form must be completed for each infant greater than 500 g.

If the death occurred in a hospital other than the hospital of birth both hospitals concerned must complete a form.

NAME OF INFANT		CHART NO OF INFANT	
GIVEN NAME OF FATHER	GIVEN NAME AND NAME OF MOTHER		AGE
ADDRESS: NO		STREET	MUNICIPALITY
PLACE OF BIRTH: HOSPITAL		PLACE OF DEATH: HOSPITAL	

SEX: MALE <input type="checkbox"/> FEMALE <input type="checkbox"/>	IN CASE OF A MULTIPLE PREGNANCY THIS FORM CONCERNS THE FIRST TWIN <input type="checkbox"/> THE SECOND TWIN <input type="checkbox"/>		
STILLBIRTH: <input type="checkbox"/> MACERATED <input type="checkbox"/> NON MACERATED <input type="checkbox"/>	NEONATAL DEATH <input type="checkbox"/>		
BIRTH WEIGHT _____ GRAMS _____ POUNDS	GESTATIONAL AGE _____ WEEKS		
CARE DURING PREGNANCY OBSTETRICIAN <input type="checkbox"/> GENERAL PRACTITIONER <input type="checkbox"/> OTHER <input type="checkbox"/> NONE <input type="checkbox"/>			

DIARY OF EVENTS.

YEAR OF BIRTH _____ INDICATE HOURS FROM 0 TO 24

	DAY	MONTH	HOURS	MINS	UNKNOWN
START OF LAST NORMAL MENSTRUATION:	_____	_____	_____	_____	<input type="checkbox"/>
EXPECTED DATE OF DELIVERY:	_____	_____	_____	_____	<input type="checkbox"/>
INTRAUTERINE DEATH: APPROX	_____	_____	_____	_____	<input type="checkbox"/>
ONSET OF LABOUR	_____	_____	_____	_____	<input type="checkbox"/>
MEMBRANES RUPTURED	_____	_____	_____	_____	<input type="checkbox"/>
ADMITTED TO HOSPITAL:	_____	_____	_____	_____	<input type="checkbox"/>
BIRTH	_____	_____	_____	_____	<input type="checkbox"/>
NEONATAL DEATH:	_____	_____	_____	_____	<input type="checkbox"/>
TRANSFER OF NEWBORN:	_____	_____	_____	_____	<input type="checkbox"/>

FOR USE OF THE CENTRAL COMMITTEE ONLY

GESTATIONAL AGE: _____ UNKNOWN

AT BIRTH: WEEKS _____ DAYS _____

AT TIME OF DEATH IN UTERO: WEEKS _____ DAYS _____

DURATION OF LABOUR: WEEKS _____ DAYS _____

DURATION OF RUPTURED MEMBRANES: WEEKS _____ DAYS _____

AGE AT TIME OF NEONATAL DEATH: WEEKS _____ DAYS _____

GRAVIDA	PARA	ABORTA	PREVIOUS PREGNANCY: INDICATE NUMBER OF PREMATURES STILLBIRTHS NEONATAL DEATHS:		
BLOOD GROUP OF MOTHER: AB <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> O <input type="checkbox"/> UNDETERMINED <input type="checkbox"/>			RH POSITIVE <input type="checkbox"/> RH NEGATIVE <input type="checkbox"/> RH UNDETERMINED <input type="checkbox"/>		
ANTIBODIES: DETERMINED <input type="checkbox"/> NOT DETERMINED <input type="checkbox"/>			TITRE: (HIGHEST) _____ DATE _____		
AMNIOCENTESIS: NO <input type="checkbox"/> YES <input type="checkbox"/>			SUCCESSIVE RESULTS: _____ CORRESPONDING DATES: _____		
INTRA-UTERINE TRANSFUSIONS: NO <input type="checkbox"/> YES <input type="checkbox"/>			DATES: _____		
COMPLICATIONS OF PREGNANCY: TOXEMIA <input type="checkbox"/> DIABETES <input type="checkbox"/> CHRONIC HYPERTENSION <input type="checkbox"/> ANTEPARTUM HAEMORRHAGE <input type="checkbox"/>					
OTHER: <input type="checkbox"/> SPECIFY _____					
HIGH-RISK PREGNANCY: NO <input type="checkbox"/> YES <input type="checkbox"/>					
SPECIFY _____					
TREATED IN A HIGH RISK PREGNANCY UNIT: NO <input type="checkbox"/> YES <input type="checkbox"/>					

LABOUR: SPONTANEOUS <input type="checkbox"/> INDUCED <input type="checkbox"/> INDICATION: _____	
AMNIOTIC FLUID: NORMAL <input type="checkbox"/> MECONIUM <input type="checkbox"/> OTHER <input type="checkbox"/> SPECIFY _____	
FOETAL HEART: PRESENT ON ADMISSION YES <input type="checkbox"/> NO <input type="checkbox"/> UNKNOWN <input type="checkbox"/>	
ABNORMAL VARIATIONS DURING LABOUR: 1 < 120 OR > 180: YES <input type="checkbox"/> NO <input type="checkbox"/>	
DURATION OF LABOUR: 1ST STAGE _____ HRS _____ MINS _____ 2ND STAGE _____ HRS _____ MINS _____	
ANALGESIA AND SEDATION: ADMINISTERED WITHIN 6 HRS PRIOR TO DELIVERY	
NO <input type="checkbox"/> YES <input type="checkbox"/> { NAME _____ DOSAGE _____ HOUR _____ NAME _____ DOSAGE _____ HOUR _____	
ANAESTHESIA: (SPECIFY TYPE AND AGENT): _____	
COMPLICATIONS OF LABOUR: _____ _____ _____	
DELIVERED BY: OBSTETRICIAN <input type="checkbox"/> GENERAL PRACTITIONER <input type="checkbox"/> OTHER <input type="checkbox"/> (SPECIFY) _____	

PRESENTATION: VERTEX BREECH
 OTHER SPECIFY _____

DELIVERY: SPONTANEOUS FORCEPS: LOW MID HIGH

CESARIAN SECTION: INDICATION: _____

OTHER MANOEUVERS: (SPECIFY) _____

COMPLICATIONS: (SPECIFY) _____

PLACENTA: { WEIGHT: _____ GRAMS
 F ABNORMAL, SPECIFY _____

MALFORMATION: NO YES **APGAR:** 1 MIN. _____ 5 MIN. _____

RESUSCITATION: NECESSARY: NO YES
 METHOD: MOUTH TO MOUTH O₂ AND MASK INTUBATION
 DURATION OF RESUSCITATION: _____ MEDICATIONS: _____

NEONATAL ASPHYXIA: NONE MODERATE SEVERE

RESPIRATORY DIFFICULTY IN THE NURSERY: NO YES **ABNORMAL CEREBRAL SIGNS:** NO YES

ESTIMATED GESTATIONAL AGE AT TIME OF EXAMINATION OF THE NEWBORN: _____

DESCRIBE OBSERVED SYMPTOMS AND SIGNS AS WELL AS THERAPY: _____

CLINICAL DIAGNOSIS: _____

TREATING PHYSICIAN: GENERAL PRACTITIONER PEDIATRICIAN OBSTETRICIAN OTHER _____

AUTOPSY: YES NO NOT REQUESTED REFUSED NO AUTOPSY SERVICE

S.V.P. ENCLOSE AUTOPSY REPORT WITH THIS FORM (ATTACH).

1. CONGENITAL MALFORMATION: (SPECIFY) _____

2. INFECTION: (SPECIFY SITE AND AGENT) _____

3. ISO-IMMUNISATION: (DESCRIBE) _____

4. TRAUMA: (DESCRIBE) _____

5. RESPIRATORY DISTRESS SYNDROME (HYALINE MEMBRANE DISEASE):

6. FOETAL MALNUTRITION:

7. ASPHYXIA:

PLACENTAL CAUSES	UMBILICAL CORD CAUSES	DUE TO LABOUR & DELIVERY	MATERNAL CAUSES
ABRUPTIO PLACENTA <input type="checkbox"/>	PROLAPSED CORD <input type="checkbox"/>	CEPHALOPELVIC DISPROPORTION <input type="checkbox"/>	TOXEMIA <input type="checkbox"/>
PLACENTA PRAEVIA <input type="checkbox"/>	CORD LOOPS OR KNOTS <input type="checkbox"/>	ABNORMAL PRESENTATION <input type="checkbox"/>	DIABETES <input type="checkbox"/>
OTHER <input type="checkbox"/>	OTHER <input type="checkbox"/>	ANAESTHESIA AND ANALGESIA <input type="checkbox"/>	OTHER <input type="checkbox"/>
		UNEXPLAINED PERIPARTUM ASPHYXIA <input type="checkbox"/>	
		OTHER <input type="checkbox"/>	

8. OTHER SPECIFIC CAUSE: (SPECIFY) _____

9. UNDETERMINED: INSUFFICIENT INFORMATION
 DESPITE ADEQUATE INFORMATION

SIGNATURE: _____

HOSPITAL: _____

APPENDIX G

